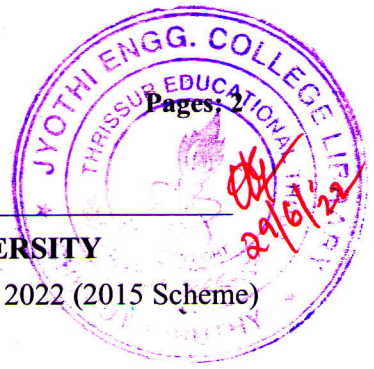


B

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Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Seventh Semester B.Tech Degree Supplementary Examination June 2022 (2015 Scheme)

Course Code: ME403

Course Name: ADVANCED ENERGY ENGINEERING

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any three full questions, each carries 10 marks.

Marks

- | | | |
|---|--|---|
| 1 | a) List major five renewable sources of energy. What is the significance of renewable sources on current global energy demand? | 6 |
| | b) What is regeneration in steam power plant? | 4 |
| 2 | a) Sketch the layout of a steam power plant. Explain the various circuits in a steam power plant | 6 |
| | b) What is a surge tank and why it is used in hydal power plants? | 4 |
| 3 | a) What are the benefits of solar energy? | 5 |
| | b) With a neat sketch explain flat plate solar collector. | 5 |
| 4 | a) How do solar photovoltaic (PV) panels work? | 6 |
| | b) Compare between mono-crystalline & poly-crystalline solar panel. | 4 |

PART B

Answer any three full questions, each carries 10 marks.

- | | | |
|---|--|---|
| 5 | a) What are the basic components of a wind turbine? | 6 |
| | b) How wind energy is converted to electricity in a wind turbine? | 4 |
| 6 | a) With a neat sketch differentiate between an up-wind and downwind machines. | 3 |
| | b) What is active yaw control in wind turbine? | 3 |
| | c) What is meant by a turbine's swept area? | 4 |
| 7 | a) Explain the different bio-chemical conversion of biomass | 6 |
| | b) What is pyrolysis of biomass? | 4 |
| 8 | a) Explain the process of transesterification | 4 |
| | b) With a neat sketch explain the working of fixed dome type digester biogas plant | 6 |

PART C

Answer any four full questions, each carries 10 marks.

- | | | |
|---|--|---|
| 9 | a) What is geothermal power? | 3 |
| | b) Explain with a neat sketch the working of Flashed steam Hydrothermal system | 7 |

- 10 a) What are the basic components of a tidal power plant? 3
b) With a neat sketch explain the working of Double basin tidal power plant 7
- 11 a) How magnetohydrodynamic generators works? 3
b) With a neat sketch explain the operation of Open cycle MHD system 7
- 12 a) How the growing consumption of fossil fuels leads to global warming? 5
b) What are the causes and effects of ozone layer depletion? 5
- 13 a) How renewable energies help on sustainable development in the context of current global energy demand? 5
b) Briefly explain any four air pollutants and their effects 5
- 14 a) What are the causes land degradation? 5
b) Explain the measures taken to control thermal pollution. 5
